

VUV STORAGE RING PARAMETERS AS OF NOVEMBER 1998

Normal Operating Energy	0.808 GeV
Peak Operating Current (multibunch ops.)	1.0 amp (1.06×10^{12} e-)
Circumference	51.0 meters
Number of Beam Ports on Dipoles	17
Number of Insertion Devices	2
Maximum Length of Insertion Devices	~ 2.25 meters
$\lambda_c(E_c)$	19.9 Å (622 eV)
B(p)	1.41 Tesla (1.91 meters)
Electron Orbital Period	170.2 nanoseconds
Damping Times	$\tau_x = \tau_y = 13$ msec; $\tau_e = 7$ msec
Lifetime @ 200 mA with 52 MHz (with 211 MHz Bunch Lengthening)	360 min (590 min)
Lattice Structure (Chasman-Green)	Separated Function, Quad, Doublets
Number of Superperiods	4
Magnet Complement	{ 8 Bending (1.5 meters each) 24 Quadrupole (0.3 meters each) 12 Sextupole (0.2 meters each)
Nominal Tunes (v_x, v_y)	3.14, 1.26
Momentum Compaction	0.0235
RF Frequency	52.886 MHz
Radiated Power	20.4 kW/amp of Beam
RF Peak Voltage with 52 MHz (with 211 MHz)	80 kV (20kV)
Design RF Power with 52 MHz (with 211 MHz)	50 kW (10 kW)
Synchrotron Tune (v_s)	0.0018
Natural Energy Spread (σ_e/E)	5.0×10^{-4} , $I_b < 20$ mA
Bunch Length (2σ)	9.7 cm ($I_b < 20$ mA) (36 cm)
(21_{rms} with 211 MHz Bunch Lengthening)	9
Number of RF Buckets	7
Typical Bunch Mode	1.62×10^{-7} , meter-radian
Horizontal Damped Emittance (ϵ_x)	$\geq 3.5 \times 10^{-10}$ meter-radian (4.0 $\times 10^{-9}$ in normal ops.)*
Vertical Damped Emittance (ϵ_y)	3.2 Watts

Arc Source Parameters

Betatron Function (β_x, β_y)	1.18 to 2.25 m, 10.26 to 14.21 m
Dispersion Function (η_x, η_y)	0.500 to 0.062 m, 0.743 to 0.093 m
$\alpha_{x,y} = -\beta'_{x,y}/2$	-0.046 to 1.087, 3.18 to -0.96
$\gamma_{x,y} = (1 + \alpha_{x,y})/\beta_{x,y}$	0.738 to 0.970 m ⁻¹ , 1.083 to 0.135 m ⁻¹
Source Size (σ_x, σ_y)	536 to 568 μ m, >60 to >70 μ m (170-200 μ m in normal ops.)*
Source Divergence (σ_x, σ_y)	686 to 373 μ rad, 19.5 to 6.9 μ rad (55-20 μ rad in normal ops.)*

Insertion Device Parameters

Betatron Function (β_x, β_y)	11.1 m, 5.84 m
Source Size (σ_x, σ_y)	1240 μ m, >45 μ m (220 μ m in normal ops.)*
Source Divergence (σ_x, σ_y)	112 μ rad, >7.7 μ rad (22 μ rad in normal ops.)*

* ϵ_y is adjustable